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(54) Title: COLLAGEN MIMICS

(57) Abstract: Novel peptidomimetics are provided, which mimic collagen. Molecular structures of interest include for imparting the collagen-mimicking property are each of: Gly-Ψ[(*E*)CH=C]-Xaa-Yaa; Gly-Xaa-Ψ[(*E*)CH=C]-Yaa; Gly-Xaa-Yaa-Ψ[(*E*)CH=CH]; Gly-Ψ[(*E*)CH=C]-Xaa-Ψ[(*E*)CH=C]-Yaa; Gly-Xaa-Ψ(*E*)CH=C]-Yaa-Ψ[(*E*)CH=CH]; Gly-Ψ[(*E*)CH=C]-Xaa-Yaa-Ψ[(*E*)CH=CH] and Gly-Ψ[(*E*)CH=C]-Xaa-Ψ[(*E*)CH=C]-Yaa-Ψ[(*E*)CH=CH]. Xaa and Yaa each means a natural amino acid, Hyp or Flp. Amide bonds may be altered to create collagen mimics. Preferably a tripeptide polymer comprising at least about 60 (Gly-Pro-Hyp) repeating units and having molecular weight of at least about 40,000 is synthesized as a long, collagen-like material. The new synthetic collagen-like materials may have better resistance to degradation, better mechanical strength and/or better ability to fold than natural collagen.

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